



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,890	10/16/2003	Robert Urscheler	62739C	9015
109	7590	04/26/2006	EXAMINER	
THE DOW CHEMICAL COMPANY INTELLECTUAL PROPERTY SECTION P. O. BOX 1967 MIDLAND, MI 48641-1967			BAREFORD, KATHERINE A	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/691,890

Applicant(s)

URSCHELER ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) 28,29,51 and 52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-23,25,26,30-45,47,48,50,53-56,59-61 and 64-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 5, 24, 27, 46, 49, 57, 58, 62 and 63 are canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>attached</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/06</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 16, 2006 has been entered.

The amendment of March 16, 2006 filed with the RCE submission has been received and entered. With this amendment, claims 5, 24, 27, 46, 49, 57, 58, 62 and 63 have been canceled, claims 28-29 and 51-52 are withdrawn, and claims 1-4, 6-23, 25, 26, 30-45, 47, 48, 50, 53-56, 59-61 and 64-80 (including new claims 75-80) are present for examination.

Claim Objections

2. The objection to claims 27 and 49 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim is withdrawn due to the cancellation of these claims in the amendment of March 16, 2006.

Priority

3. In the specification, applicant indicates that this case is a continuation-in-part of 10/273,866 filed 10/17/02, which is a continuation-in-part of 10/257,172, filed 4/12/02. However, a review of 10/257,172 indicates that the application does not provide support for the independent claims of the present application as the first and second components capable of reacting of claim 1 and the at least one reactable component and time of reaction of claim 30 are not provided in 10/257,152. Therefore, the earliest effective date for the present application is no earlier than 10/17/02.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over (A) Yokota (US 6,746,718) or (B) WO 01/76884 A1 (hereinafter '884) in view of in view of Kustermann (US 6146690) and Takahashi et al (US 5885659).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884 A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 teaches a method of producing a coated substrate. Column 3, lines 10-40. The method includes forming a free flowing curtain. Column 2, lines 20-30 and column 17, lines 15-40. The curtain has a first component and a second component capable of reacting with each other. Column 3, lines 20-40 and column 7, lines 1-55, for example. The curtain is contacted with a continuous web substrate. Column 17, lines 15-40.

Claim 2: the curtain can be multilayer. Column 17, lines 15-40. The curtain has at least two layers. Column 17, lines 15-40 and column 3, lines 20-40. One layer contains the first component. Column 3, lines 20-40 and column 7, lines 1-55. A second layer contains the second component. Column 3, lines 20-40 and column 7, lines 1-55.

Claim 3: an internal layer can be present between the layers comprising the first component and the layer comprising the second component. Column 3, lines 20-40 and column 7, lines 1-55.

Claims 4, 33: the reaction type can be an anionic-cationic-interaction. Column 7, lines 1-55.

Claim 6: the curtain can have at least one layer comprising a first and second component capable of reacting with each other. Column 13, line 45 through 14, line 10 (for heat printing).

Claims 8, 32: the curtain can be a composite multilayer curtain. Column 17, lines 15-40.

Claims 9, 34: the reaction between the first and second components can occur when applied to the substrate, for example. Column 6, lines 10-35.

Claims 12, 35: a top layer to ensure printability can be provided. Column 14, lines 20-35.

Claims 13, 50: the substrate can have a weight of 60 g/m². Column 17, lines 30-40.

Claims 16, 38: the curtain can be three layers. Column 17, lines 30-40.

Claims 17-18, 39-40: the curtain can have a layer with at least one pigment. Column 13, lines 15-30. The pigment can be talc, kaolin, calcium carbonate, etc. Column 13, lines 15-30.

Claims 19-20, 41-42: the curtain can have a layer with a binder. Column 12, lines 40-50. The binder can be polyvinyl alcohol, etc. column 12, lines 40-55.

Claims 21, 43: the curtain can have a layer with an optical brightening agent. Column 12, lines 30-40 (fluorescent brightener).

Claims 22, 44: the curtain can have a surfactant. Column 12, lines 25-35.

Claims 25, 47: the substrate can be a basepaper. Column 17, lines 30-35.

Claims 30-31: the curtain has first and second components capable of reacting. Column 3, lines 20-40 and column 7, lines 1-55. The components can begin reacting during coating and be completely reacted before the coating process is complete. Column 6, lines 20-30 (i.e. before the end of drying as part of the coating process).

Claim 53: the curtain can contain a reactive component that reacts by external means, such as heat. Column 13, lines 40-65.

Claims 65, 69: the curtain can be formed with a slide die. Column 17, lines 15-25.

Claim 66, 67, 70, 71, 80: the curtain can contain polyethylene oxide in any layer. Column 13, lines 15-30.

Yokota/'884 teaches all the features of these claims except (1) the cationic starch and anionic component (claim 11), (2) the dried weight (claims 14, 15, 36, 37), (3) the solids content (claims 1, 23, 30, 45, 80), (4) the not precoated or precalendered paper (claims 26, 48), (5) the epoxy functional and amine hardening agent (claim 73), (6) the web speed (claims 1, 39, 75-80), and (7) the use of a slot die (claims 64, 68). Yokota does teach that the components include a positively charged (cationic) compound and a

negatively charged (anionic) compound. Column 7, lines 10-25. The coating can also contain starch. Column 12, lines 45-50. One of the compounds can be an amine. Column 7, lines 25-30. The coating can also contain epoxy. Column 12, lines 60-65. As to the dried weight, Yokota does teach various examples with varying composition amounts (see Example 5, column 16, line 45 through column 17, line 40, for example) with wet weights, and that these are dried. As to the solids content, Yokota does teach various examples with varying composition amounts (see Example 5, column 16, line 45 through column 17, line 40, for example). A variety of different layers can be applied. Column 5, lines 5-35. Yokota teaches that a variety of different layer combinations can be applied.

Kusterman teaches that when curtain coating, it is well known to provide that the solids content of the curtain can be between 5 and 80 percent, preferably between 30 and 75%. Column 2, lines 50-60. Furthermore, the web speed can be greater than 600 m/min, preferably more than 1000 m/min. Column 3, lines 1-10. The applied coating weight can be desirably between 3 and 30 g/m². column 2, lines 60-65.

Takahashi teaches a curtain coating process to be used with either a slot or slide die (that applies a multilayer curtain). Column 6, lines 45-60 and figures 1 and 4. Takahashi teaches that when performing such coating, a variety of coating materials can be used as the coating liquid regardless of solid content concentrations without having any restrictions as long as they are coating liquids capable of being applied by curtain coating. Column 7, lines 20-35. A variety of webs can be used, as well, including paper.

Column 7, lines 35-40. Moreover, the coating speed can be 15-1500 m/min. Column 7, lines 40-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) and (5) modify Yokota/'884 to perform routine experimentation to optimize what positively charged and negatively charged compounds to use as suggested by the Examples of Yokota testing for optimal coating. As a result, the use of components suggested to be present such as starch, amines and epoxy materials would be tested for optimal viscosity increasing. (2) (3) It would further have been obvious to modify Yokota/'884 to perform routine experimentation to optimize the weight of the dried coating and solids content depending on the specific information recording materials desired as suggested by Kustermann and Takahashi in order to provide a desirable coating, given the variety of coating possibilities given by Yokota and the variety of materials that can be present and the teaching by Kustermann that solids content in the range of 30-75 % are desirable for curtain coating (which would include the claimed range of 45% or more) and that the coat weight can be 3-30 g/m² and the further teaching of Takahashi that conventional solids content can be used for single or multilayer curtain coating as long as the material is capable of being curtain coated. (4) It would further have been obvious to modify Yokota/'884 in view of Kustermann and Takahashi to use paper that had not been precoated or precalendered with an expectation of desirable coating results, because Yokota/'884 and Takahashi teach to use paper in general, and untreated paper would be a well known material that

would be a subset of paper that would be expected to work. (6) Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 to optimize the web speed as taught by Kustermann and Takahashi in order to provide desirable quick coating application, because Yokota/'884 teaches curtain coating various numbers of layers of coating and Kustermann teaches that a desirable web speed for curtain coating is over 600 m/min and preferably over 1000 m/min and Takahashi teaches that desirable web speed for curtain coating can reach 1500 m/min, for example. (7) Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustermann and Takahashi to use either a slot or slide die as taught by Takahashi in order to provide desirable coating application, because Yokota/'884 teaches curtain coating various numbers of layers of coating and Takahashi teaches that either slot or slide dies can be desirably used for curtain coating.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota or WO 01/76884 in view of Kustermann and Takahashi as applied to claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 above, and further in view of Japan 11-192777 (hereinafter '777).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884 A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 in view of Kustemann and Takahashi teaches all the features of these claims except the specific coating materials.

'777 teaches that when performing multilayer coating that can be curtain coating, that when it is desirable to increase viscosity by reacting components in layers together, polyvinyl alcohol and borax can be used as the two components. See the abstract, paragraphs [0031] and [0044] – [0047].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustemann and Takahashi to use reactive materials such as taught by '777 in order to provide desirable viscosity increase, because Yokota/'884 in view of Kustemann and Takahashi teaches reactive material from different layers to increase viscosity and '777 teaches that two such components for such a process are polyvinyl alcohol and borax.

8. Claims 10 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota or WO 01/76884 in view of Kustemann and Takahashi as applied to claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 above, and further in view of Hanaki et al (US 6060206).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884 A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 in view of Kustemann and Takahashi teaches all the features of these claims except the specific coating materials.

Hanaki teaches that when forming information recording materials, a protection layer can desirably be provided which contains materials such as starches and polyvinyl alcohol and that this layer can desirably be cross-linked with dialdehyde or borax.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustemann and Takahashi to use reactive materials such as taught by Hanaki in order to provide desirable viscosity increase, because Yokota/'884 in view of Kustemann and Takahashi teaches reacting material from different layers to increase viscosity and '777 teaches that two such component combinations for such a process are polyvinyl alcohol and borax or starch and dialdehyde.

9. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota or WO 01/76884 in view of Kustemann and Takahashi as applied to claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 above, and further in view of Asano et al (US 6335085).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884 A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 in view of Kustemann and Takahashi teaches all the features of these claims except the specific coating materials.

Asano teaches that when forming information recording materials, coatings such as polyurethane coatings can be formed by reacting polyisocyanate compositions and polyol compounds. Column 7, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustemann and Takahashi to use reactive materials such as taught by Asano in order to provide desirable viscosity increase, because Yokota/'884 in view of Kustemann and Takahashi teaches reactive material from different layers to increase viscosity and Asano teaches two reactive materials that form desirable compounds for information recording materials.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota or WO 01/76884 in view of Kustemann and Takahashi as applied to claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 above, and further in view of Sakagami et al (US 6214416).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884 A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 in view of Kustemann and Takahashi teaches all the features of these claims except the specific coating materials.

Sakagami teaches that when forming coating materials to absorb UV rays for surfaces such as paper and film, coatings such as epoxy resins can be formed by reacting polyglycidyl esters with amino silanes. Column 12, lines 50-65, column 1, lines 5-10, column 2, lines 40-60 and column 20, lines 5-15. The coating can be applied by various coating methods such as flow coating. Column 19, lines 60-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustemann and Takahashi to use reactive materials such as taught by Sakagami in order to provide UV protection layers, because Yokota/'884 in view of Kustemann and Takahashi teaches reactive materials used in coating and Sakagami teaches two reactive materials that form desirable compounds for UV protection of articles.

11. Claims 54-56 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota or WO 01/76884 in view of Kustemann and Takahashi as applied to claims 1-4, 6, 8, 9, 11-23, 25, 26, 30-45, 47, 48, 50, 53, 64-71, 73 and 75-80 above, and further in view of either Schweizer Article (Premetered Coating Processes: Advantages and Applications) (as provided by applicant) or Hughes (US 3508947).

** Yokota is a continuation of PCT/JP01/02497, which issued as WO 01/76884
A1. As a result, Yokota is understood to act as a translation for '884, and '884 is rejected for the same reasons as given for Yokota. **

Yokota/'884 in view of Kustemann and Takahashi teaches all the features of these claims except the number of coating layers.

Schweizer Article teaches that when performing curtain coating it is well known to apply coatings at speed up to 30 m/s (1800 m/min) and with layer numbers up to over 10. See Table 1. The article also teaches that that both slot dies and slide dies are well known forms of curtain coating. See figure 1.

Hughes teaches that when performing multilayer curtain coating, it is well known to provide 10 or more individual layers. Column 14, lines 65-75 and figure 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokota/'884 in view of Kustemann and Takahashi to optimize the number of layers applied to up to 10 or more as suggested by Schweizer Article or Hughes in order to provide a desirable number of applied materials on the web, because Yokota/'884 in view of Kustemann and Takahashi teaches curtain coating various numbers of layers of material on the web and Schweizer Article and Hughes both teach that when multilayer curtain coating, it is well known that up to 10 or more layers can be applied.

Response to Arguments

12. Applicant's arguments with respect to claims 1-4, 6-23, 25, 26, 30-45, 47, 48, 50, 53-56, 59-61 and 64-80 have been considered but are moot in view of the new ground(s) of rejection.

New art to Kustermann and Takahashi has been provided as to the suggestion of curtain coating with a solids content greater than 45% at speeds of greater than 600 m/min. While the examples of Yokota/'884 are at lower speeds, they are merely examples, and there is no requirement maintaining that low speed in the specification. The use of higher speeds allows for the advantage of quicker coating, allowing more efficient production. Similarly, in Yokota/'884 there is no requirement as to the use of solids content of less than 45%.

As to the use of Schweizer Article and Hughes in reference to the number of layers possible, both references clearly show the state of the art as to this issue.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER